AMENDMENTS TO THE CLAIMS

The following is a complete listing of the claims, which replace all previous versions and listings of the claims.

1-29. (canceled).

30. (currently amended) A field emission device, comprising

a substrate having a top side and an opposite bottom side;

a conductive epitaxial buffer layer affixed to the top side of the substrate;

a dielectric layer disposed on the top side;

a conductive layer disposed on top of the dielectric layer opposite the substrate, the conductive layer and the dielectric layer defining a cavity extending downwardly to the substrate; and

at least one nanorod affixed to the substrate via the conductive epitaxial buffer layer and substantially disposed within the cavity, wherein the conductive epitaxial buffer layer remains after formation of the at least one nanorod.

31. (canceled).

32. (original) The field emission device of Claim 30, employed in an imaging system.

33. (original) The field emission device of Claim 30, employed in a lighting system.

34. (previously presented) The field emission device of Claim 30, wherein the nanorod is an X-nanorod, wherein X comprises a carbide, an oxide, a nitride, an oxynitride, an oxycarbide or a silicide, or combinations thereof.

35. (original) The field emission device of Claim 30, wherein the substrate comprises an inorganic monocrystalline substance.

36. (previously presented) The field emission device of Claim 35, wherein the inorganic monocrystalline substance comprises silicon, an aluminum oxide, and silicon carbide, and combinations thereof.

37. (previously presented) The field emission device of Claim 30, wherein the dielectric layer comprises silicon dioxide, silicon nitride, silicon oxynitride, and aluminum oxide, and combinations thereof.

38. (currently amended) A nanostructure, comprising:

an inorganic substrate having a top side and a bottom side;

an epitaxial conductive buffer layer disposed adjacent to the top side; and

a plurality of elongated carburized metal nanostructures extending from the epitaxial conductive buffer layer,

wherein the epitaxial conductive buffer layer remains after formation of the plurality of elongated carburized metal nanostructures, and

wherein the plurality of elongated carburized metal nanostructures comprises catalyst particles disposed between the epitaxial conductive buffer layer and the plurality of elongated carburized metal nanostructures at least prior to growth of the plurality of elongated carburized metal nanostructures.

39. (previously presented) The nanostructure of Claim 38, wherein the inorganic substrate comprises a crystalline substance made of silicon, aluminum oxide, and silicon carbide, or combinations thereof.

40. (original) The nanostructure of Claim 38, wherein the plurality of elongated carburized metal nanostructures comprises at least one nanorod.

41. (original) The nanostructure of Claim 38, wherein the plurality of elongated carburized metal nanostructures comprises at least one nanoribbon.

42. (original) The nanostructure of Claim 38, wherein the plurality of elongated carburized metal nanostructures each has a smaller dimension of less than 800 nm.

43. (previously presented) The nanostructure of Claim 38, wherein the carburized metal is carburized from an oxide of a metal comprising molybdenum, niobium, hafnium, silicon, tungsten, titanium, or zirconium, or combinations thereof.

44. (currently amended) A field emission device, comprising

a substrate having a top side and an opposite bottom side;

a dielectric layer disposed on the top side;

a conductive layer disposed on top of the dielectric layer opposite the substrate, the conductive layer and the dielectric layer defining a cavity extending downwardly to the substrate;

a conductive platform, having a top surface, disposed on the top side of the substrate within the cavity, wherein the conductive platform is independent from catalyst particles configured to grow the at least one nanorod, and the catalyst particles are disposed in a channel; and

at least one nanorod affixed to the top surface of the conductive platform and substantially disposed within the cavity.

45. (original) The field emission device of Claim 44, wherein the conductive platform comprises a conic-shaped member having a relatively large bottom surface opposite the top surface, the bottom surface affixed to the substrate.

46. (previously presented) The field emission device of Claim 44, wherein the conductive platform comprises silicon, molybdenum, platinum, palladium, tantalum, or niobium, or combinations thereof.

47. (original) The field emission device of Claim 44, wherein the nanorod is a carbide nanorod.

48. (original) The field emission device of Claim 44, wherein the substrate comprises an inorganic monocrystalline substance.

49. (previously presented) The field emission device of Claim 48, wherein the inorganic monocrystalline substance comprises silicon, aluminum oxide and silicon carbide, or combinations thereof.

50. (original) The field emission device of Claim 44, wherein the substrate comprises a polycrystalline material.

51. (original) The field emission device of Claim 44, wherein the substrate comprises amorphous glass.

52. (original) The field emission device of Claim 44, wherein the dielectric layer comprises silicon dioxide.

53. (canceled).

54. (currently amended) A field emission device, comprising

a substrate having a top side and an opposite bottom side;

a polycrystalline conductive diffusion barrier affixed to the top side of the substrate;

a dielectric layer disposed on the top side;

a conductive layer disposed on top of the dielectric layer opposite the substrate, the conductive layer and the dielectric layer defining a cavity extending downwardly to the substrate; and

at least one nanorod affixed to the substrate via the polycrystalline conductive diffusion barrier and substantially disposed within the cavity, wherein the at least one nanorod extends from a top surface of the polycrystalline conductive diffusion barrier.

55. (currently amended) A nanostructure, comprising:

an inorganic substrate having a top side and a bottom side;

a polycrystalline conductive diffusion barrier disposed adjacent to the top side; and

a plurality of elongated carburized metal nanostructures extending from the polycrystalline conductive diffusion barrier, wherein the polycrystalline conductive diffusion barrier is configured to inhibit formation of unwanted structures due to interaction between the inorganic substrate and reactants.

56. (previously presented) The field emission device of Claim 30, wherein the conductive epitaxial buffer layer is a diffusion barrier.

57. (previously presented) The field emission device of Claim 30, wherein the conductive epitaxial buffer layer is configured to inhibit formation of unwanted structures due to interaction between the substrate and reactants.

58. (previously presented) The field emission device of Claim 30, wherein the conductive epitaxial buffer layer is independent from catalyst particles configured to grow the at least one nanorod.

59. (canceled).

60. (previously presented) The field emission device of Claim 30, comprising catalyst particles disposed between the conductive epitaxial buffer layer and the at least one nanorod at least prior to growth of the at least one nanorod.

61. (previously presented) The field emission device of Claim 30, wherein the at least one nanorod extends from a top surface of the conductive epitaxial buffer layer.

62. (previously presented) The nanostructure of Claim 38, wherein the epitaxial conductive buffer layer is a diffusion barrier.

63. (previously presented) The nanostructure of Claim 38, wherein the epitaxial conductive buffer layer is configured to inhibit formation of unwanted structures due to interaction between the inorganic substrate and reactants.

64. (previously presented) The nanostructure of Claim 38, wherein the epitaxial conductive buffer layer is independent from catalyst particles configured to grow the plurality of elongated carburized metal nanostructures.

65. (canceled).

66. (canceled).

67. (previously presented) The nanostructure of Claim 38, wherein the plurality of elongated carburized metal nanostructures extends directly from a top surface of the epitaxial conductive buffer layer.

68. (previously presented) The field emission device of Claim 44, wherein the conductive platform supports the at least one nanorod in a raised position relative to the substrate.

69. (previously presented) The field emission device of Claim 44, wherein the conductive platform extends substantially around the at least one nanorod above the topside of the substrate after formation of the at least one nanorod.

70. (canceled).

71. (previously presented) The field emission device of Claim 44, wherein the conductive platform remains after formation of the at least one nanorod.

72. (previously presented) The field emission device of Claim 44, comprising catalyst particles disposed between the conductive platform and the at least one nanorod at least prior to growth of the at least one nanorod.

73. (new) The field emission device of claim 54, wherein the polycrystalline conductive diffusion barrier remains after formation of the at least one nanorod.

74. (new) The field emission device of claim 54, comprising catalyst particles disposed between the polycrystalline conductive diffusion barrier and the at least one nanorod at least prior to growth of the at least one nanorod.

75. (new) The nanostructure of claim 55, wherein the polycrystalline conductive diffusion barrier remains after formation of the at least one nanorod.

76. (new) The nanostructure of claim 55, wherein the plurality of elongated carburized metal nanostructures extends from a top surface of the polycrystalline conductive diffusion barrier.